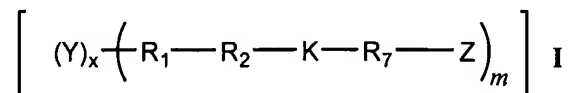


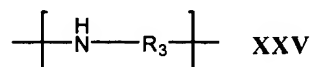
Amendments to the Claims:

1. (Currently amended) An alkyl-linked nucleotide composition ~~comprising~~  
consisting essentially of a general formula:



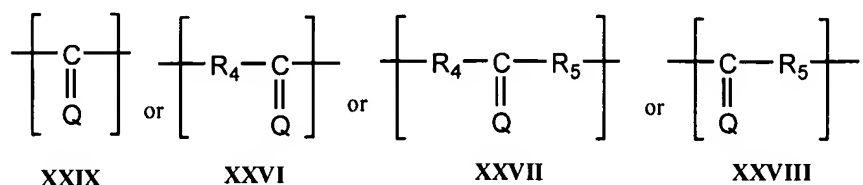
wherein Y is a solid support, ~~a tag, or a protective group~~; x = 0 or 1; R<sub>1</sub> is a covalent bond between Y and R<sub>2</sub>, or R<sub>1</sub> is ~~[[an]]~~ a divalent acyl group, a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl group, a substituted or a non-substituted divalent aryl group, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof; -R<sub>2</sub> is a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof; K is ~~a heteroatom-NH~~; R<sub>7</sub> is (P)<sub>n</sub> where P is a phosphate or thiophosphate and n is at least one or R<sub>7</sub> is a phosphate group mimic, Z is a 5'-nucleosidyl group or a 5'-nucleosidyl group wherein the nucleoside is not naturally occurring, or a derivative thereof ~~nucleoside or nucleoside derivative~~; and m is at least one.

2. (Currently amended) The alkyl-linked nucleotide composition of claim 1, wherein R<sub>2</sub> further comprises ~~[[a]]~~ the general formula:



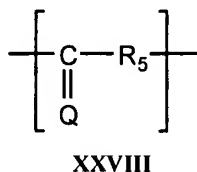
wherein R<sub>3</sub> is a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof.

3. (Currently amended) The alkyl-linked nucleotide composition of claim 2, wherein R<sub>1</sub> further comprises:



wherein Q = O or NH<sub>2</sub><sup>+</sup>; R<sub>4</sub> is a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl group, a substituted or a non-substituted divalent aryl group, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof; and R<sub>5</sub> is a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl group, a substituted or a non-substituted divalent aryl group, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof.

4. (Currently amended) The alkyl-linked nucleotide composition of claim 3, wherein R<sub>1</sub> consists of ~~comprises~~ comprises ~~[[a]]~~ the general formula:

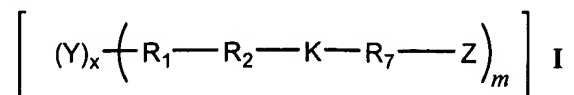


5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Currently amended) [[The]] A nucleotide affinity medium consisting essentially of an alkyl-linked nucleotide composition of Formula (I) of claim 7, wherein the composition is a nucleotide affinity medium.



wherein Y is a solid support; x = 1; and R<sub>1</sub> is a covalent bond between Y and R<sub>2</sub>, or R<sub>1</sub> is a divalent acyl group, a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl group, a substituted or a non-substituted divalent aryl group, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof; R<sub>2</sub> is a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof; K is NH; R<sub>7</sub> is (P)<sub>n</sub> where P is a phosphate or thiophosphate and n is at least one or R<sub>7</sub> is a phosphate group mimic, Z is a 5'-nucleosidyl group or a 5'-nucleosidyl group wherein the nucleoside is not naturally occurring, or a derivative thereof; and m is at least one.

9. The nucleotide affinity medium of claim 8, wherein the solid support includes at least one member selected from the group consisting of an acrylamide, agarose, methacrylate, cellulose, nylon, silica, glass, ceramic, a magnetized particle, nitrocellulose, polystyrene, a thermoresponsive polymer, and derivatives thereof.

10. The nucleotide affinity medium of claim 9, wherein the solid support is a beaded agarose.

11. The nucleotide affinity medium of claim 8, wherein the solid support has a loading of an alkyl-linked nucleotide in a range of 5-25%.

12. The nucleotide affinity medium of claim 8, wherein the solid support has a loading of an alkyl-linked nucleotide in a range of 20-50%.

13. The nucleotide affinity medium of claim 8, wherein the solid support has a loading of an alkyl-linked nucleotide in a range of 40-65%.

14. The nucleotide affinity medium of claim 8, wherein the solid support has a loading of an alkyl-linked nucleotide in a range of 60-80%.

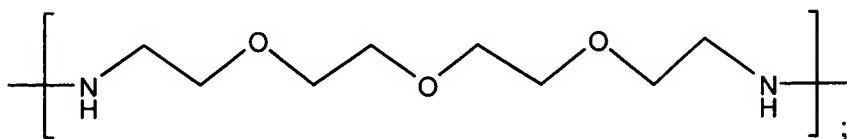
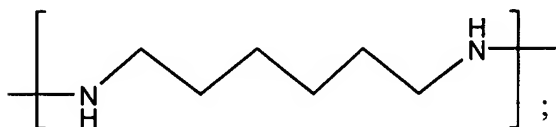
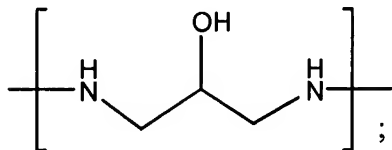
15. The nucleotide affinity medium of claim 8, wherein the solid support has a loading of an alkyl-linked nucleotide in a range of 75-100%.

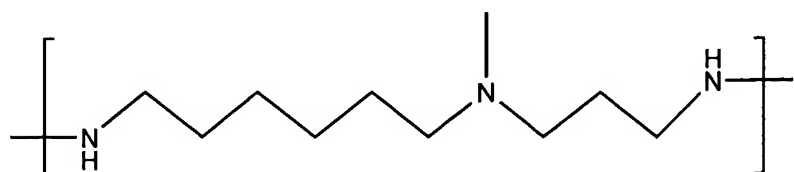
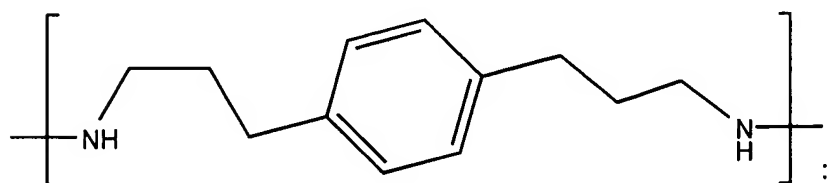
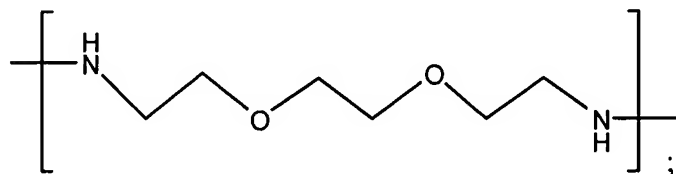
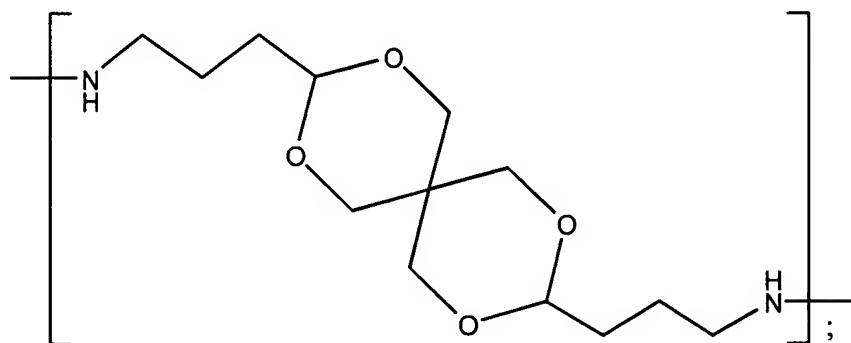
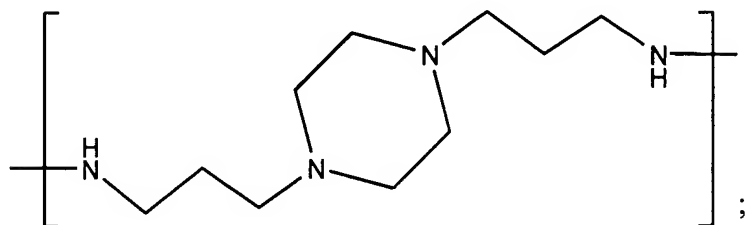
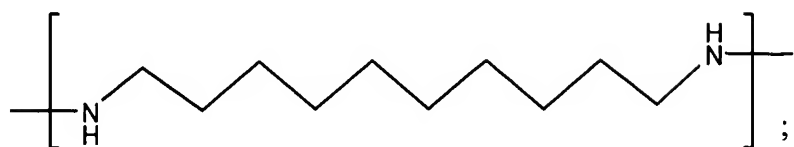
16. (Canceled)

17. The alkyl-linked nucleotide composition of claim 1 wherein  $R_7$  is  $(P)_n$ .

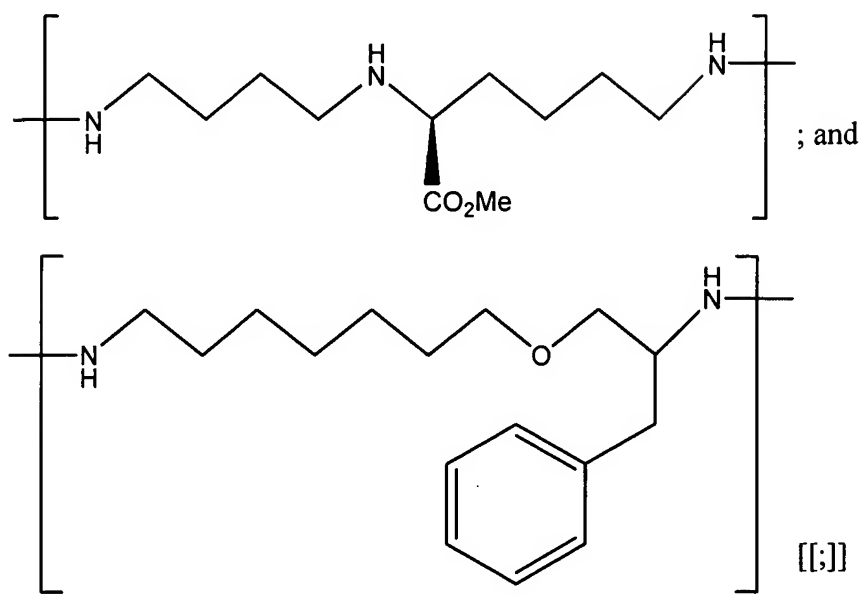
18. The alkyl-linked nucleotide composition of claim 17, wherein  $n$  is 1, 2, 3, or 4.

19. (Currently amended) The alkyl-linked nucleotide composition of claim 1, wherein  $R_2$  is a linker selected from the group consisting of:

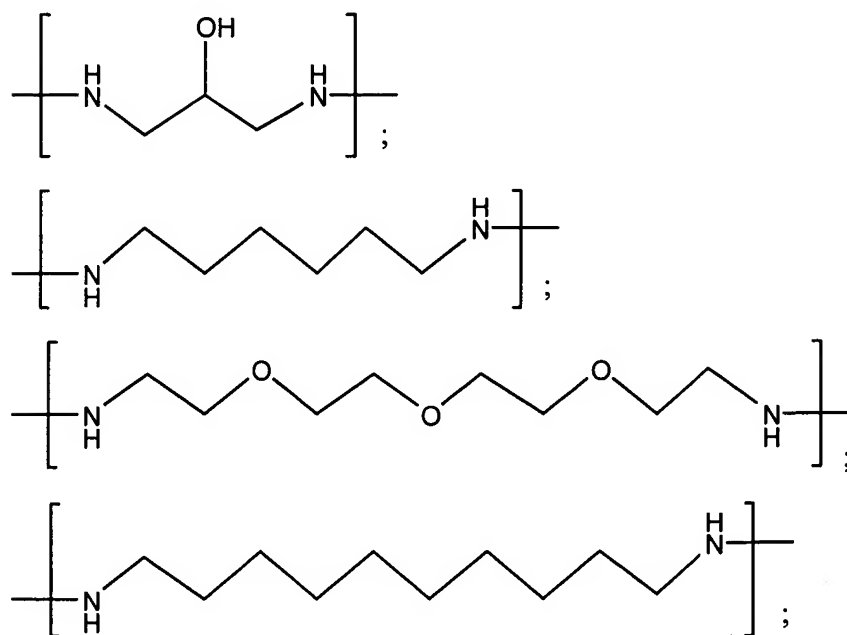


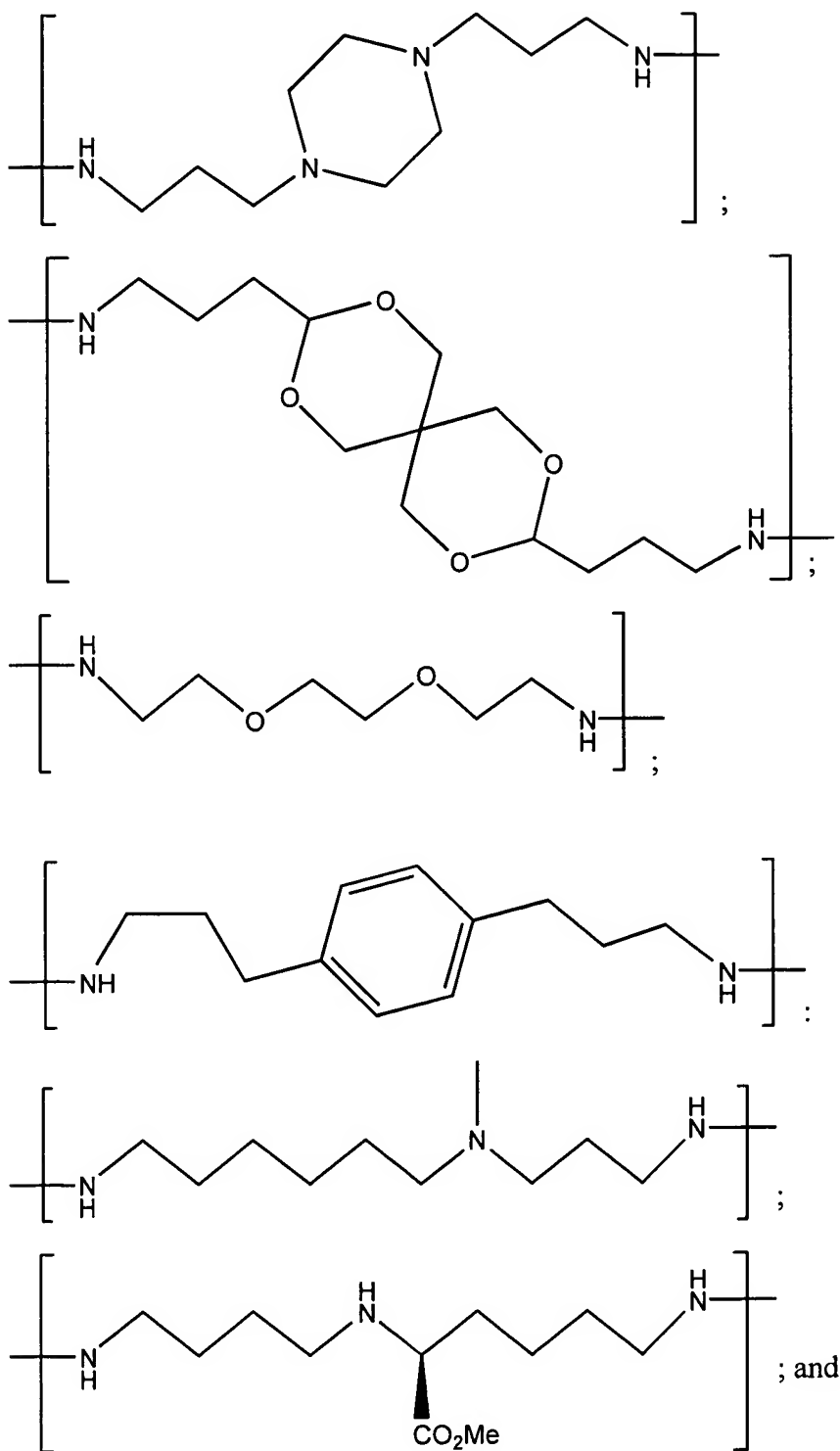


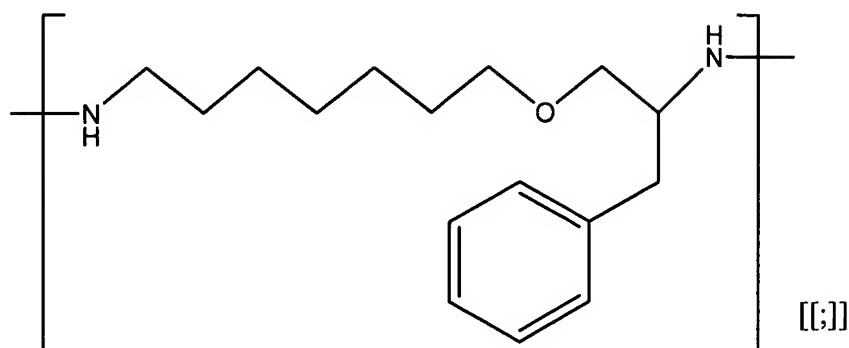
Reply to Office action of September 27, 2006



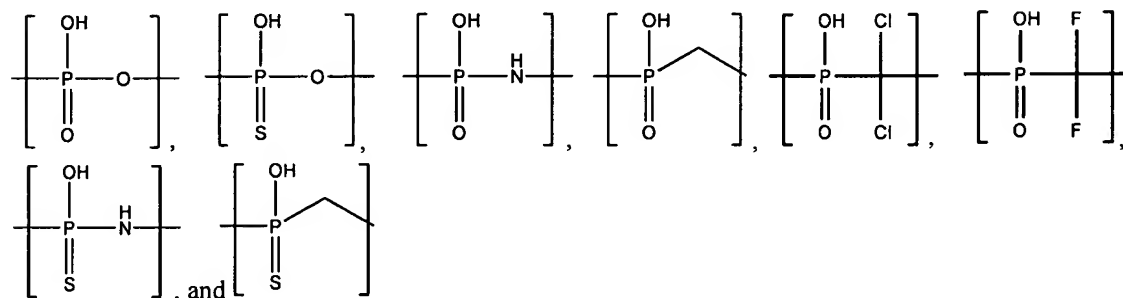
20. (Currently amended) The alkyl-linked nucleotide composition of claim 1, wherein if m is more than one, then R<sub>2</sub> is at least one linker selected from the group consisting of:







21. (Currently amended) The alkyl-linked nucleotide composition of claim 17, wherein P is selected from the group consisting of

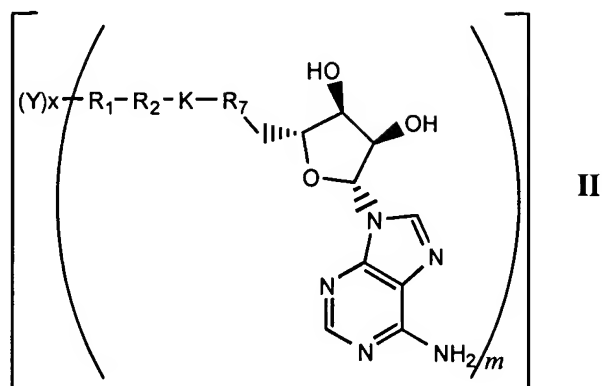


[[and]] or an ionized variant or a salt thereof.

22. (Currently amended) The alkyl-linked nucleotide composition of claim 1, wherein the nucleoside is selected from the group consisting of an adenosine[[e]]yl radical, a guanosin[[e]]yl radical, a cytidine[[e]]yl radical, a thymidine[[e]]yl radical, and an uridine[[e]]yl radical, or an analog thereof.

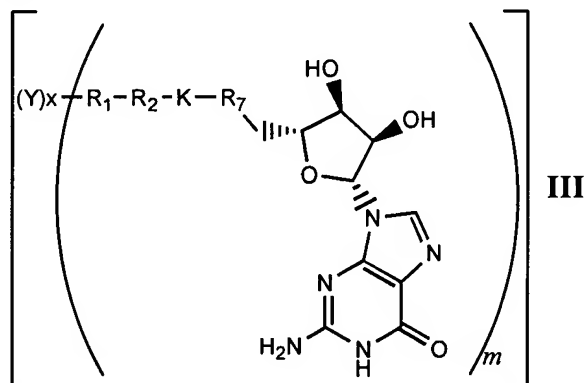
23. (Currently amended) The alkyl-linked nucleotide composition of claim 22, wherein the nucleoside is an adenosine[[e]]yl radical, said alkyl-linked nucleotide composition consisting essentially of ~~comprising~~ a general structure:





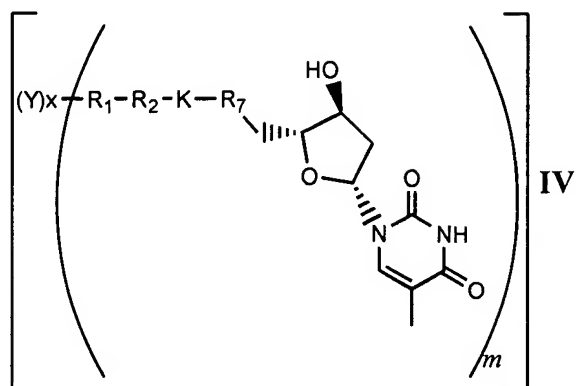
or an ionized variant or a salt thereof.

24. (Currently amended) The alkyl-linked nucleotide composition of claim 22, wherein the nucleoside is a guanosin[[e]]yl, said alkyl-linked nucleotide composition consisting essentially of comprising a general structure:



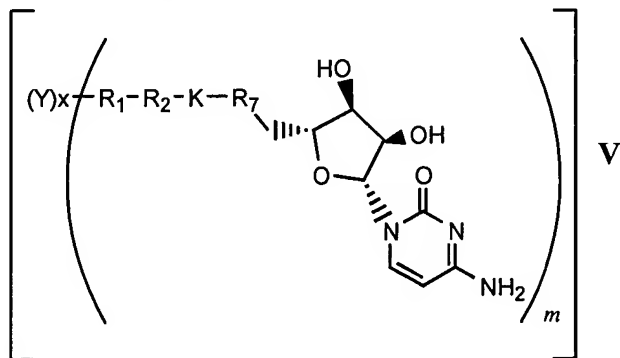
or an ionized variant or a salt thereof.

25. (Currently amended) The alkyl-linked nucleotide composition of claim 22, wherein the nucleoside is a thymidine[[e]]yl radical, said alkyl-linked nucleotide composition consisting essentially of comprising a general structure:



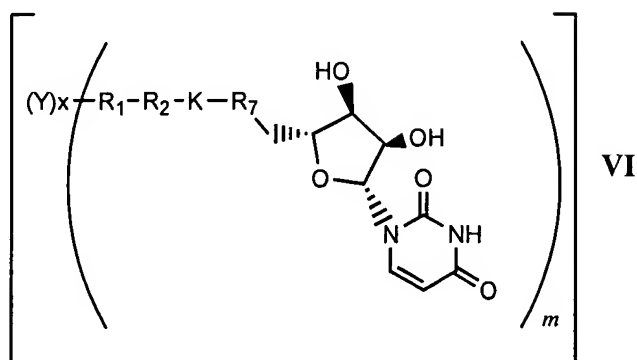
or an ionized variant or a salt thereof.

26. (Currently amended) The alkyl-linked nucleotide composition of claim 22, wherein the nucleoside is a cytidine[[e]]yl radical, said alkyl-linked nucleotide composition consisting essentially of comprising a general structure:



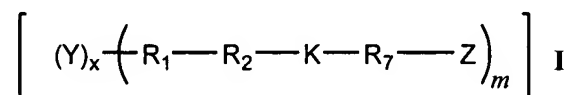
or an ionized variant or a salt thereof.

27. (Currently amended) The alkyl-linked nucleotide composition of claim 22, wherein the nucleoside is an uridine[[e]]yl radical, said alkyl-linked nucleotide composition consisting essentially of comprising a general structure:



or an ionized variant or a salt thereof.

28. (Currently amended) A method for synthesizing a nucleotide affinity medium consisting essentially of ~~comprising~~ a general formula:



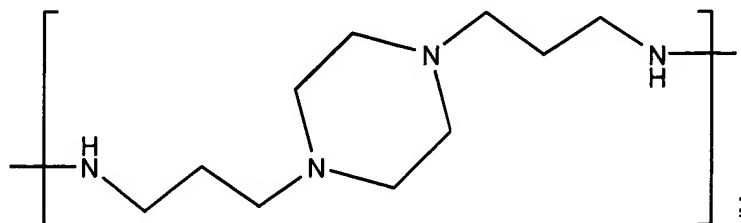
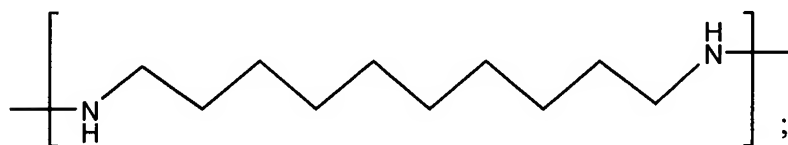
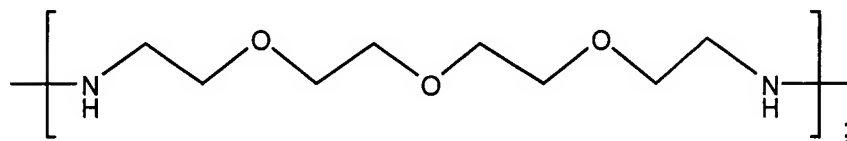
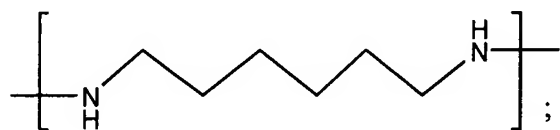
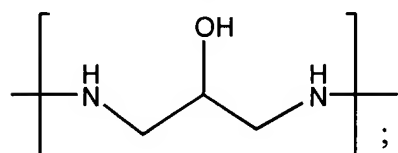
comprising the steps of:

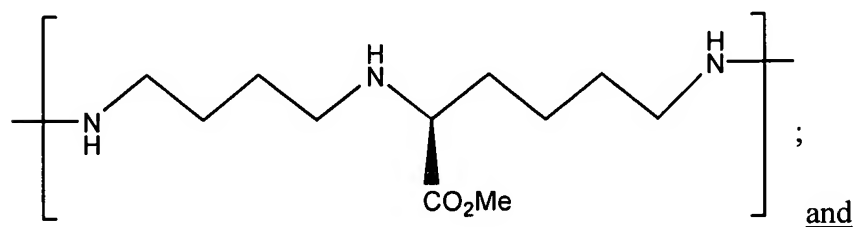
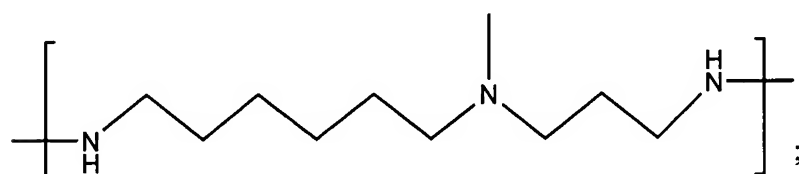
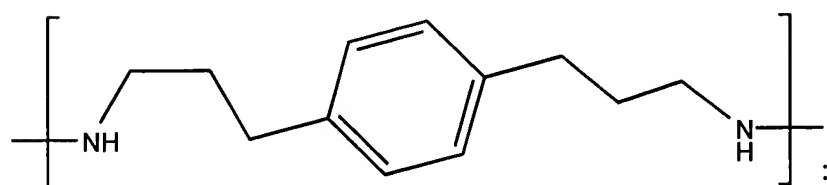
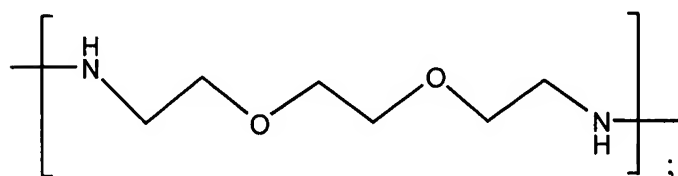
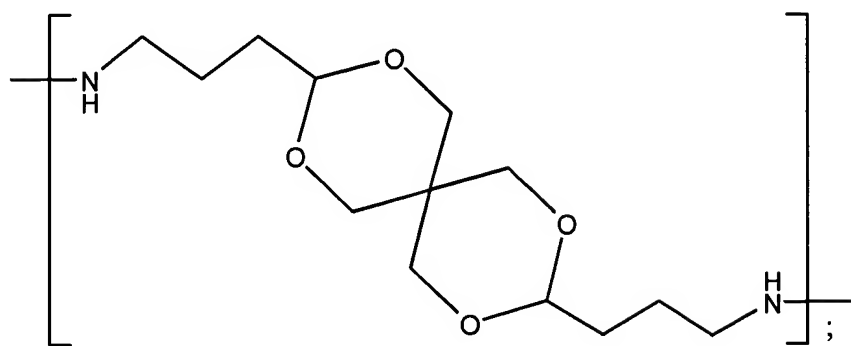
- a) coupling at least one linker to a solid support ~~or tag~~ in a suitable coupling buffer, wherein said linker is  $R_2$  or a combination of  $R_1$  and  $R_2$ ;
- b) end-capping at least a portion of reactive sites remaining on said solid support ~~or tag~~ after said coupling step; and
- c) reacting a terminal phosphate or thiophosphate group of a nucleotide with said linker coupled to said solid support ~~or tag~~,

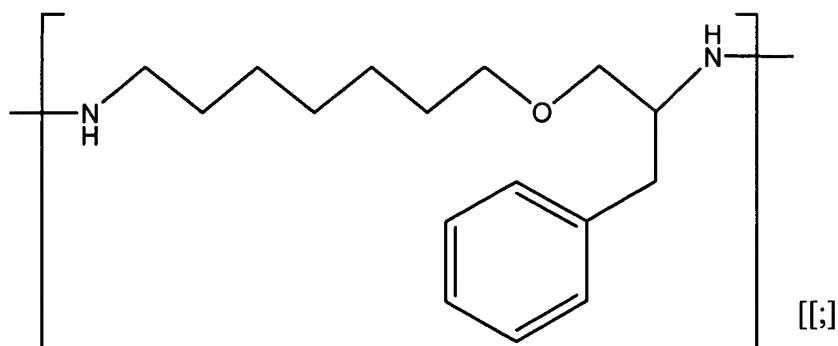
wherein Y is a solid support ~~or a tag~~;  $x = 1$ ;  $R_1$  is a covalent bond between Y and  $R_2$ , or  $R_1$  is ~~[[an]]~~ a divalent acyl group, a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl group, a substituted or a non-substituted divalent aryl group, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof;  $R_2$  is a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl, a substituted or a non-substituted divalent heteroaryl group, or a combination

thereof; K is NH a heteroatom; ~~[[R7]]~~  $R_7$  is  $(P)_n$  where P is a phosphate or thiophosphate and n is at least one or  $R_7$  is a phosphate group mimic; Z is a 5'-nucleosidyl group or a 5'-nucleosidyl group wherein the nucleoside is not naturally occurring, or a derivative thereof ~~nucleoside or nucleoside derivative~~; and m is at least one.

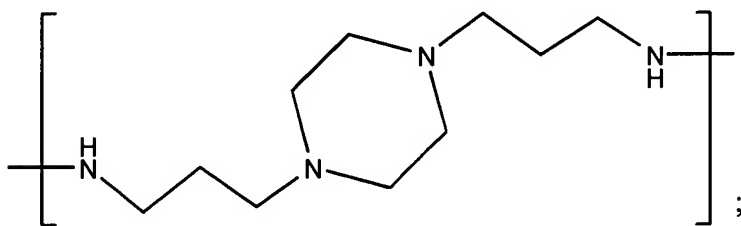
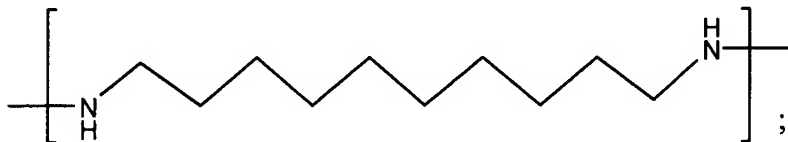
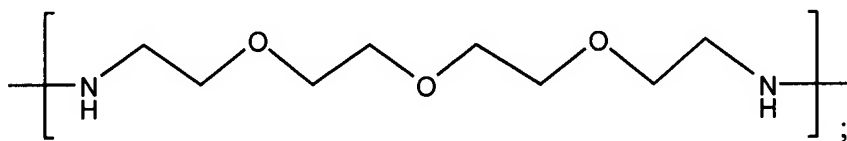
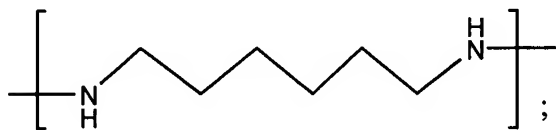
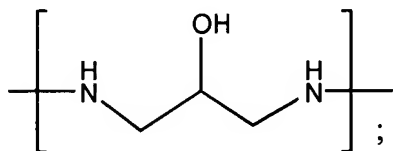
29. (Currently amended) The method of claim 28, wherein  $R_2$  is a linker selected from the group consisting of:

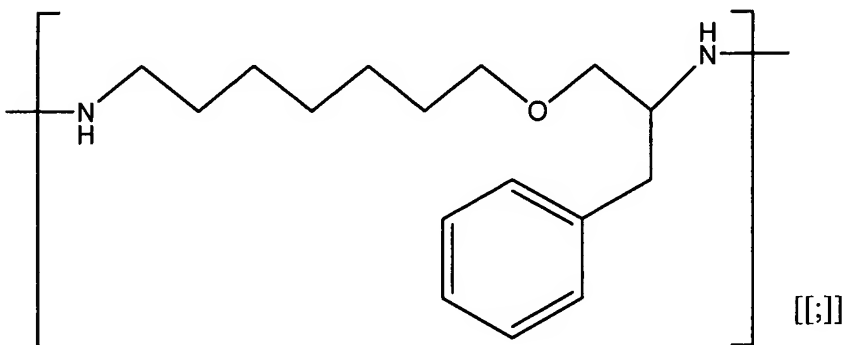
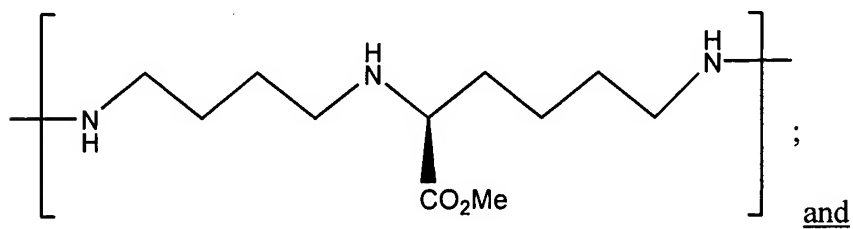
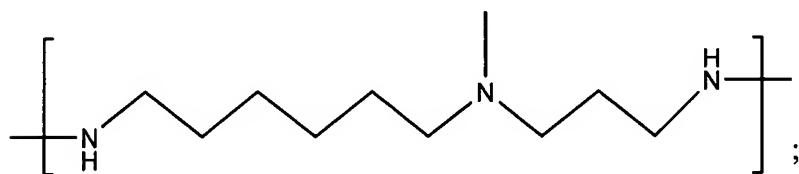
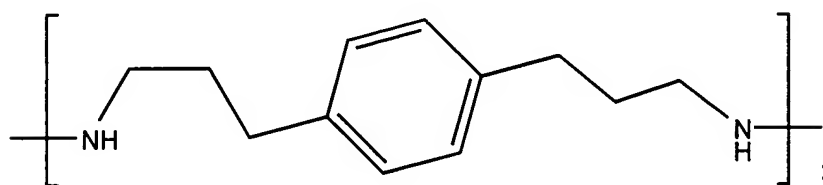
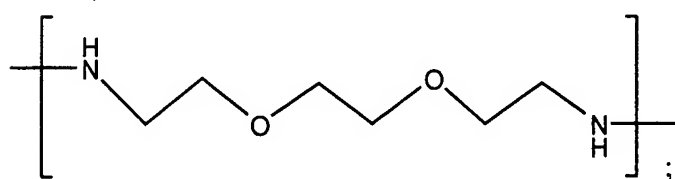
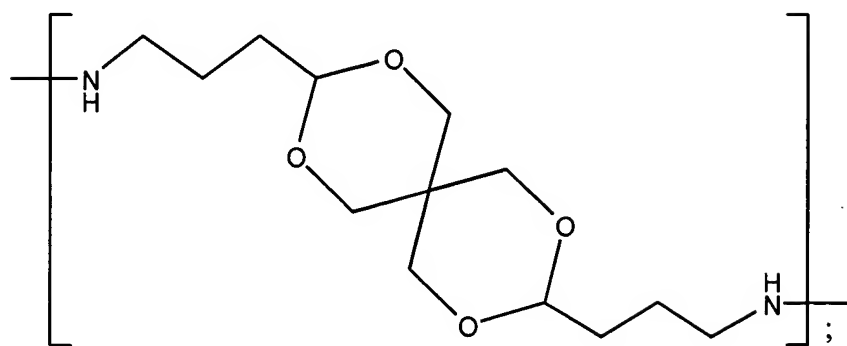






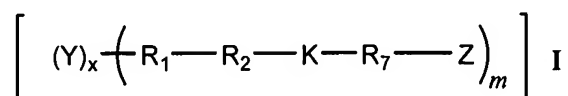
30. (Currently amended) The method of claim 28, wherein if m is more than one, then R<sub>2</sub> is at least one linker selected from the group consisting of:





31. (Currently amended) A method for screening a test compound comprising the steps of:

a) contacting a proteome with a nucleotide affinity medium ~~comprising~~ consisting essentially of a general formula:



wherein Y is a solid support ~~or a tag~~; x = 1; R<sub>1</sub> is a covalent bond between Y and R<sub>2</sub>, or R<sub>1</sub> is ~~[[an]]~~ a divalent acyl group, a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl group, a substituted or a non-substituted divalent aryl group, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof; R<sub>2</sub> is a substituted or a non-substituted divalent alkyl group, a substituted or a non-substituted divalent cycloalkyl group, a substituted or a non-substituted divalent heteroalkyl group, a substituted or a non-substituted divalent heterocycloalkyl, a substituted or a non-substituted divalent heteroaryl group, or a combination thereof; K is NH ~~a heteroatom~~; R<sub>7</sub> is (P)<sub>n</sub> where P is a phosphate or thiophosphate and n is at least one or R<sub>7</sub> is a phosphate group mimic, Z is a 5'-nucleosidyl group or a 5'-nucleosidyl group wherein the nucleoside is not naturally occurring, or a derivative thereof ~~nucleoside or nucleoside derivative~~; and m is at least one.

b) washing the nucleotide affinity medium with a buffer, whereby non-specifically bound components of the proteome are eluted from the nucleotide affinity medium and specific components of the proteome remain bound to the nucleotide affinity medium;

c) contacting the nucleotide affinity medium bound with specific components of the proteome with at least one test compound;

d) eluting from the nucleotide affinity medium components of the proteome that are specifically displaced by the test compound; and

e) identifying the components of the proteome that are specifically displaced by the test compound from the nucleotide affinity medium.